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THE BITELEPHONE

INVENTED BY M. E. MERCADIER

Patented in France and in all foreign countries.

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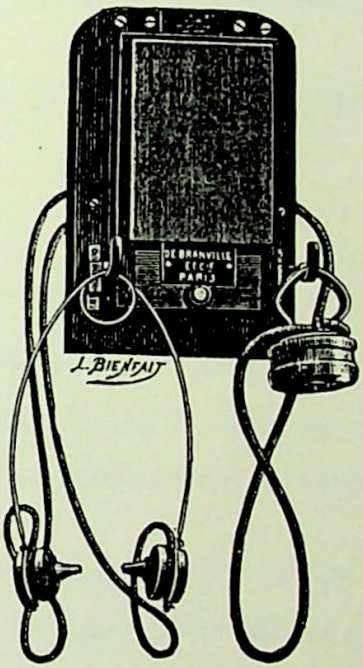

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THE BITELÈPHONE

Invented by M. E. MERCADIER.

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The bitelephone represented fig. 1 is composed of two telephones T and T carrying end pieces *tt* and connected together by a steel spring VVV.

The instrument weighs only 120 gr. whereas the weight of two ordinary telephones is about 800 gr.; it can be kept automatically against the ears (fig. 2) and is neither fatiguing nor inconvenient. The hands being free it is easy to take down in writing all telephonic messages received or transmitted.

The bitelephone can be used with all existing mi-

crophones whether mounted on a support (fig. 5) or fixed against the wall (fig. 6) or having the form of a desk.

It has been adopted by the French government.

Description.

M. Mercadier has shown by his researches on the theory of the telephone (1) that the principal qualities of this instrument, that is to say : the intensity and the clearness of the effects which reproduce the voice do not depend on the absolute size of the telephones, but on a judicious proportion between the following elements : the intensity of the magnetic field, the diameter and the thickness of the diaphragm.

He has thus been able to construct telephones weighing less than 50 gr. (whereas the average weight of the ordinary telephone is 400 gr.), and

(1) *Comptes rendus de l'Académie des Sciences*, 1885, 1887, 1889, 1891. — *Annales Télégraphiques*, 1886, 1889, 1891.

with a diameter of only 3 cm. These small telephones have the same qualities in regard to loudness as the ordinary telephones and they are even superior to the latter in regard to clearness (1). One of their advantages is that the vowels and closed diphtongues *e*, *eu*, *i*, *u*, *ui*, which are so badly transmitted by the ordinary telephones are perfectly clear with these small instruments, so that the repetitions at present so frequent are avoided, the natural tone of the voice remaining unaltered.

The experiments made have led to the construction of very light telephones TT which can be kept pressed against the ears without the aid of the hands. They have hearing pieces *tt* (fig. 1) and are connected together by a steel wire in the form of a V exercicing a sufficient pression on the telephones to keep them against the ears with the aid of the

(1) This superiority has been proved by comparative tests on a subterranean telephone line of 75 km., on another line of 800 km. and on the line between Paris and London.

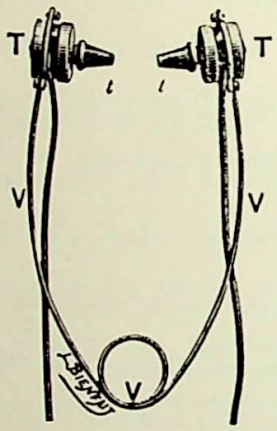

Fig. 1. — The Bitelephone.

pieces *tt* (fig. 2). The slight pression of the spring V can be regulated by the operator himself simply by separating the branches of the V. The openings of the ears furnish the necessary hold.

The combination of these two small telephones connected by the spring V constitute the *bitelephone*. The hearing pieces *tt* are further utilised to bring the sound waves with a maximum of intensity and clearness as near as possible to the membrane of the ear, whereas the spring V properly magnetised can add to, and maintain the magnetism of the core in the induced coils, and facilitate the electric communication between the two telephones TT.

Various Uses.

The bitelephone can be used by everybody who has a telephone post and wishes to save the trouble of holding the telephone receivers against the ears. The instrument is more particularly indispensable to bankers, brokers, reporters, business people, etc.,

Fig. 2. — (Receiving a message with the bitelephone).

who wish to take notes of the telephonic communications sent or received or even to write them down entirely.

This result has hitherto only been obtained with the so called «telephone-helmets» but these are very heavy and rest on the head which is compressed by a strong spring; they are further inconvenient because they bring the hair out of order and oblige the person using them to take off his hat. This is not necessary with the bitelephone, and the opérator can himself regulate as he wishes the slight pression of the spring VVV (fig. 1) by spreading the branches of the V.

The end pieces *tt* entering into the opening of the ears are covered with cones C (fig. 3) which can be removed and answer a triple purpose: 1° they reduce the friction of the instrument against the ears; 2° they close more absolutely the ear in order to exclude all exterior noises; 3° they render this part of the instrument *absolutely personal*, as these cones, made of rubber, can be easily removed so that every

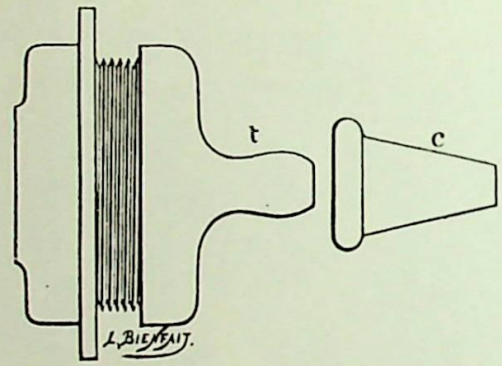

Fig. 3. — Moveable end-piece of rubber.

person using the telephone can have his own pair exclusively for his private use.

With the bitelephone everybody can write down all the telephonic messages received and thus keep a record of them. Outside of the persons already named the instrument might be used by the operators in the central telephone offices and by those in charge of the transmission of telephonic dispatches, because it can be kept against the ears for several hours without any fatigue.

The bitelephone can also render other valuable services; it can be used in telegraph offices to find electrical faults, and in scientific laboratory work as a galvanoscope in order to detect the passage of a current; it can even take the place of a galvanometer for certain electrical mesures such as polarised resistances, etc. In all these cases the hands of the operator are free to do any work that may be necessary, the bitelephone being kept antomatically against the ears.

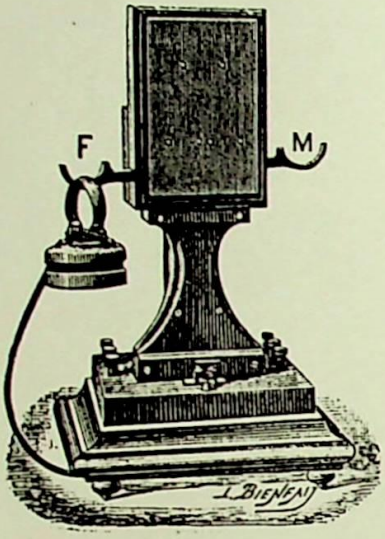

Fig. 4. — Microphone while receiving.

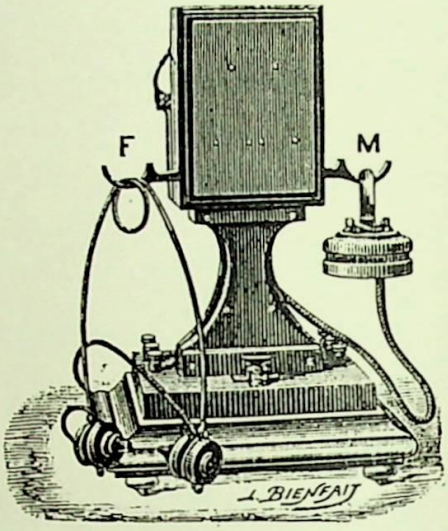

Fig. 5. — Bitelephone fixed to a microphone on support.

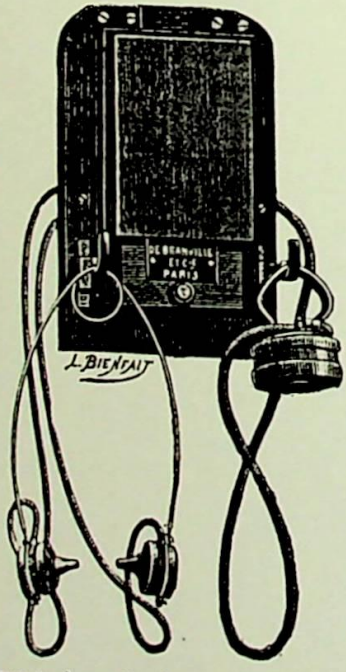

Fig. 6. — Bitelephone fixed to a microphone on a wall.

Installation.

The bitelephone can be fitted to all the existing microphones whether being mounted on a support (fig. 5) or fixed against a wall (fig. 6) or in the form of a desk.

It can be fitted to any microphone either alone or with an ordinary telephone or with two ordinary telephones.

1st *case.* — If the bitelephone is fitted alone to a microphone it is necessary to add a counterweight in order to bring down the lever M.

2nd *case.* — If the bitelephone is fitted to a microphone with an ordinary telephone the latter is used to work the lever M ; it can also be utilised for calling the central office, asking for connection, etc.

3rd *case.* — If the bitelephone is mounted on a microphone with two ordinary telephones, one of

these is used to work the lever M. The operator can then listen either with the ordinary telephones or with the bitelephone. If however the communication takes place over a very long line, it is better not to add to the ordinary electrical resistance of the instruments, and in such a case a small and inexpensive switch can be provided in order to leave the bitelephone alone in circuit.

Instructions.

We will only mention the instructions for the second case, the others following naturally from this.

In beginning the conversation the bitelephone should be placed against the ears and the ordinary telephone should be changed from the lever M to the fixed lever F (fig. 4). At the end of the conversation the ordinary telephone should be replaced on M so as to bring this lever down ; the bitelephone is hung on the lever F (fig. 5).

The bitelephone is patented in France and abroad.

The principal claims made are in regard to the mecanical, electrical and magnetic combination of the two telephones, their resting point inside the ears (hearing pieces, and a spring having the form of a V passing under the chin), although this part of the instrument is not the most original nor interesting from a scientific point of view. But these claims guarantee the bitelephone against all similar systems so that during the whole life of the patents its only competitor will be the « telephone-helmet ». But the bitelephone will be utilised as we have seen, not only by those who wish to write down their messages but also by all those who, using a telephone daily, wish to avoid the fatigue of holding the receivers against the ears.

Any further information required can be obtained by applying to M. Henri Pierquin fils, 3, rue de Cerisoles, Paris.

Laval. — Imp. et Ster. E. JAMIN, 41, rue de la Paix.

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